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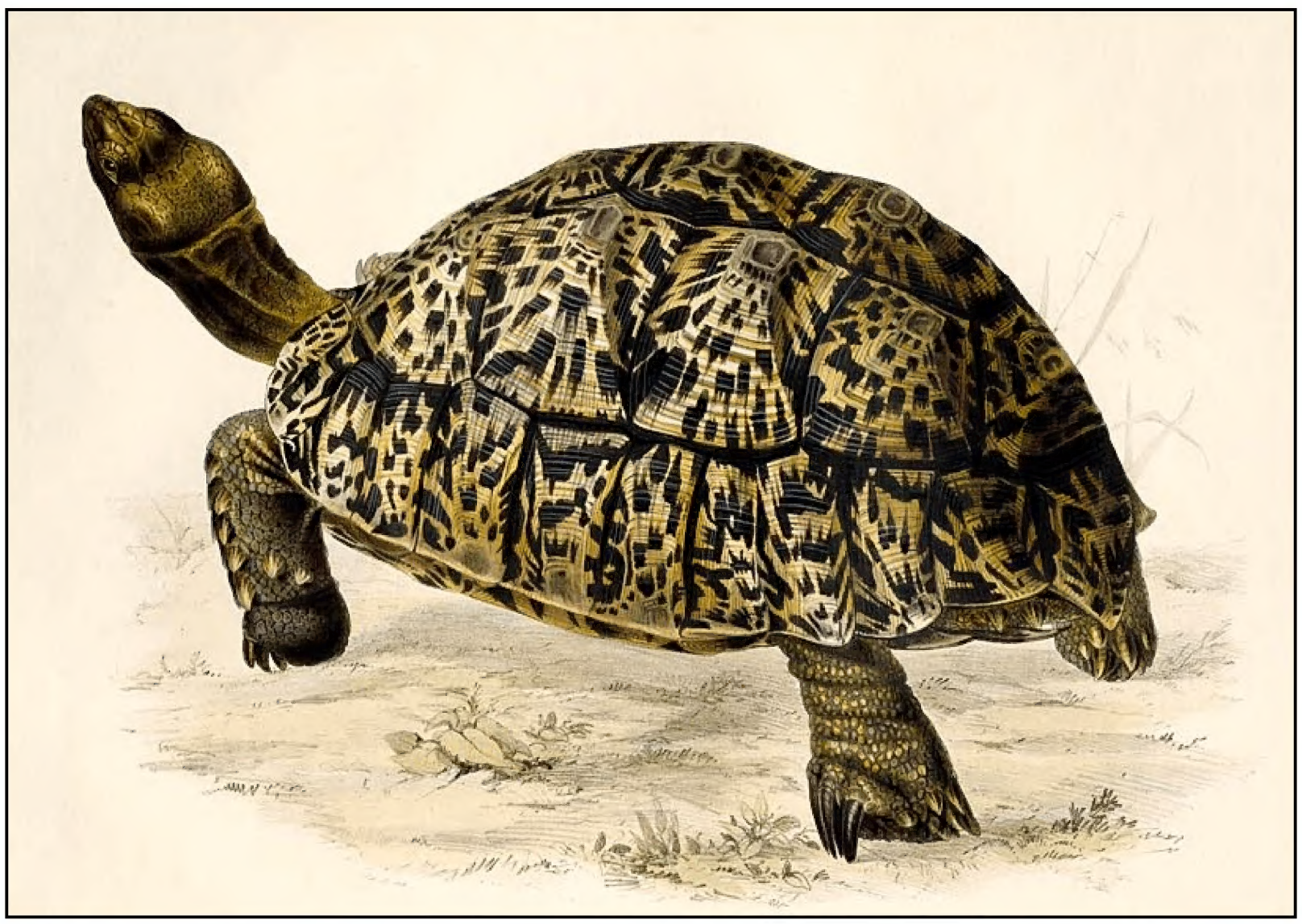

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Snakes in Pakistani Folklore

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Introduction

During my studies on the snakes of Pakistan, I consulted in addition to the scientific literature, books written in Urdu by *hakims* (local physicians) in search of relevant information. However, except for anecdotal folk tales, I found nothing to help. Since the stories are interesting, reflecting common suppositions regarding snakebite and treatment, a selection is presented in this article.

Folklore narratives tend to misinterpret natural phenomena. The tales often stem from purely observational truths, get amalgamated with ideas from different sources, and are passed from teller to teller, arriving at what seems the most logical story. Whatever mythological figures are referred to in Pakistani literature come from neighboring Singhalese, Indian and south-east Asian cultures. Pakistani snake folklore clearly can be traced to different cultures of the Subcontinent.

The Subcontinent is predominantly agricultural. Changes in seasons are reflected in changes in flora and fauna. Reptiles, especially snakes, are frequently encountered in fields, pastures, waters and deserts. Snakebites are frequent, medical care meager. The common man relies on local *hakims* and *vaids*, who claim to have snakebite treatments in the form of herbs, mantras and dams. To convince, they tell stories relating the curing abilities of their teachers, certain great *hakims*, *vaids*, *pundits* and *mandris*, the pivotal figures in the folk tales. These are said to have roamed about in the Himalayas and the deserts of Sindh and Balochistan for years until they discovered some herb or are told of a curing mantra or dam. To keep the attention of the audience, wondrous snake stories are told, which circulate in homes, travel from village to village, among young and old. Every subsequent narrator adds his or her part to make the story more mythical and supernatural.

This paper presents a selection of five of the most often told stories in folk meetings and popular literature. These stories illustrate how an observation is built on. Human imagination invents interesting stories and old wives' tales. To enjoy the theme of these tales fully, it helps to understand the meanings of some of the local terms used in the tales:

Batasha: an oval, round crunchy white sweet made from sugar. Often served on happy occasions, weddings etc.

Guru: teacher, religious leader.

Hakim: an Arabic word used for a person practicing in indigenous medicines, a wise man.

Hukka: water tobacco smoking pipe: a device prepared by binding two curved hollow reeds, fixing on a central earthen pot filled with water. A crushed lump of dried tobacco is placed on burning coal in a cup like earthen pot at one end of the device the person sucks to draw smoke of the tobacco, also known hubble-bubble, hookah.

I'd: Yearly Muslim festival of rejoicing.

Mantra: mysterious incantation uttered by pundits and mantris, believed to have a magical effect on a patient.

Mandri = *Mantri*: one who professes incantations to cure snakebites. They are responsible in part for spreading snake folklore in public. Most mandris are snake charmers.

Pundit: A Hindu religious teacher; held in great reverence in the Hindu religion.

Ji: an honorific suffix.

Raja: a small ruler.

Sanyasi = *Yogi* = *Jogi*: a nomadic tribesman, who roams about in desolate areas, collecting herbs and catching snakes. Fleeces innocent people. Spreads beliefs in folklore in which charismatic healing powers of mantras and magical powers of snakes are exaggerated. They are responsible for spreading misconceptions among the general public.

Sadhu: a disciple or personal servant of a *sanyasi*, leading an austere life.

Sayyad = *Shah*: a person known to be from the dynasty of the Holy Prophet, generally believed to have some charismatic powers.

Vaid: a person practicing the ayurvedic system of medicine. He is thought to be knowledgeable at curing different ailments.

Read through the following eloquently told and fascinating tales, and marvel at the geniuses who invented them.

I.

It happened during the reign of Mogul Emperor Shah Jahan (1628–58 AD), that a regiment of soldiers was keeping guard at royal arsenal in the city of Agra, India. Every night four sentries took turn to guard the depot. One morning the sentries on duty failed to report back. The search party found them and their horses dead. There was no apparent sign of violence on the bodies and there were no wounds to indicate the possible cause of their deaths.

A soldier, Sayyad Muzzafar Ali Shah, was known to be a simple pious man, everybody respected him. He met the commandant and told him that the dead men and their horses were bitten by a poisonous snake, by pointing out the fang marks on the dead bodies. Everybody panicked. However, Sayyad told the commandant that the victims could be revived if he was provided with the following items:

• A silver cup,
• One thousand cups made from clay,
• A piece of white silken cloth,
• One thousand pieces of white cotton cloth,
• Enough fresh milk to fill all the cups,
• A large sheet of white paper,
• A piece of charcoal,
• Royal canopy set to view the display, with a gilded chair.

These items were readily provided. The sayyad had the canopy erected in a spacious place, and the chair was placed under it. Then he placed the silver cup in the center of the canopy filled with milk and covered with the silken cloth. All the clay cups were arranged around the canopy on ground, filled with milk, each covered with piece of cotton cloth.

Then Shah Sahib requested the commandant to order soldiers to form a double row in front of the canopy, leaving a passage in the middle. His request was immediately taken care of.

Then he stood close to the canopy and chanted some words in some incomprehensible language and at the same time wrote something on the paper with a piece of charcoal. Lo! There began appearing snakes of different kinds, sizes and colors; some were large, some medium-sized, small or thin—in short almost every variety of snakes was present there. Every snake went straight to the nearest cup in an orderly pattern, and rested. The atmosphere was filled with the loud chanting of Shah Sahib, who went on writing and chanting uninterrupted, the rustling noise of wriggling snakes added an aura of mystery.

After about half an hour, everybody's attention was drawn to a huge hooded black snake that appeared in the passage specially left between the lines of the soldiers, a small, beautiful golden-crowned snake was sitting on its hood, followed by several hundred more snakes. As the golden-crowned snake entered the pavilion, Shah Sahib came forward as if welcoming it and had it sit on the golden chair, while rest of the snakes bowed in respect. Shah Sahib begged pardon from the snake with the golden crown, for giving it trouble to come. He explained to the king of snakes by pointing to the dead bodies of the four men and their horses and said he wanted the culprit snake be called and punished. At this the king-snake said something to the large black hooded snake, who hurriedly left the pavilion. There prevailed pin-drop silence; even the breathing sound of the audience was audible. After about half an hour or so, the large black snake appeared dragging behind a smaller black snake, who at the sight of the king-snake began trembling all over. The king-snake pointed to the dead bodies. The small black snake went to each of them and sucked the poison from the fang marks on their bodies. And lo! Before all, to their bewilderment, the dead men and horses stood up and looked around in amazement.

Then Sayyad Sahib went forward respectfully and uncovered the silver cup and requested the king-snake to honor him by accepting the cupful of milk. The king-snake readily dipped its mouth in the cup and drank it empty. Shah Sahib wiped its mouth with the silken cloth. Then rest of the snakes drank from their cups.

At last Shah Sahib requested the king-snake to allow him to punish the culprit snake. The king-snake consented by bowing its head. Shah Sahib stood close to the king-snake and began chanting and tearing the paper from its middle. Suddenly the culprit snake began to cry and toss and roll restlessly on the ground. Then its body started splitting from the middle of its head. As soon Shah Sahib finished tearing the paper, the snake's body fell dead cut in two halves.

Shah Sahib requested the commandant to order to present a guard of honor to the king-snake, after which the whole army of snakes left. Everyone was left astonished at what they had seen, and desired to learn from Shah Sahib how he called the king-snake. The commandant also requested Shah Sahib to let him know. Shah Sahib demurred.

That night Sayyad Muzzafar Ali Shah slept on his cot as usual, in the tent. Nobody saw him next morning. He disappeared without leaving a trace. Despite efforts of the whole regiment he was nowhere to be found.

II. (told in the first person)

One morning in summer, I and my servant were on our way to visit a small village, in Tehsil Phalia, District Gujrat, Punjab, Pakistan. I was riding a mare while the servant was walking at my side. When we were nearing Phalia, suddenly we saw a foot-and-a-half long snake lolling on the ground across our way. We changed our course without disturbing it. When my servant, by chance, looked back he saw the same snake following us, moving in short jumps. We were terrified. I told my companion to jump on the horse behind me to leave the place as soon as possible. He refused to do so, and requested me to get away fast from the danger. I quickened my pace, the man ran for some distance along me, but soon was out of breath. He decided to face the snake. He stood firmly, holding his stick in both hands. The snake was about 30 yards away from him. When the snake was about five yards from him, it suddenly took a jump high in the air and was about to drop on my servant's head. He swung the stick and gave the dropping snake a mighty blow. It struck the snake at midbody. I saw the snake break in half in midair. I heaved a sigh of relief, we both went to look at the dead snake. Only its tail half was lying there; we were unable to find the front half.

To our utter amazement the stick melted away in a smoky cloud, which disappeared in the sky. People gathered around told us that the snake was very poisonous. It had been blocking the passage of travelers for the past two years.

Soon we reached our destination. My servant ran a high fever, and remained unconscious for two days. Hakim Sahib told me that the fever was due to the snake's poison transmitted through the stick. If he had held the stick longer, he would have been long since dead.

III.

In a small village Gangoora, Near Bajnor, India, a shepherd was bitten by a snake. Despite efforts of local hakims and sanyasis he died. The dead body was thrown into the River Ganges. Downstream was a sanyasi who was bathing on the bank of the river. He saw the floating dead body and dragged it

out. From signs and appearance of the body he knew that it was a victim of snakebite. He slit open its skull, lit a fire, and chanted some mantras. Soon the dead man rose and asked for water.

The sanyasi took him as his disciple, taught him mantras, and how to deal with different snakes and cure snakebite cases. Both sanyasi and the disciple roamed about in villages and towns professing their trade for alms.

By chance, after several years, they happened to reach the shepherd's village. While roaming the streets door to door, they arrived at the door of the shepherd's house. Astonished members of the family recognized him, and persuaded the sanyasi to allow him to join his family. They were told that if separated from the sanyasi, he would die of the poison.

So both stayed as guests in shepherd's house for long time, often leaving to roam about for short periods.

IV.

Pundit Chooni Lal was a famous vaid in Lahore, Pakistan. Once he told me a true story which was related to him by his late guru ji:

On a summer evening when the sky cleared after a monsoon shower, it was pleasant outside. The guru decided to have a walk in a nearby garden. In the way he met a well-dressed horseman. After exchanging greetings, the horseman, who was new to the place and wanted to stay for the night, asked the guru if he could help. The guru, impressed by his personality and way of talking, offered him to stay in his house.

When the man settled down he introduced himself as a mantri (physician) in the court of a nearby raja.

Both mantri and guru went for a walk in the garden to enjoy the pleasant evening. As they were walking, suddenly a snake crossed their way. The mantri told the guru that the snake had recently bitten a man. The guru was reluctant to believe. The mantri, to prove his assertion, asked the guru to follow him. He started walking towards the direction from which the snake had come. Soon they were in a small village. They heard wailing and crying of women, and found that the people were preparing a dead body for last rites. It was told that the dead man was a farmer bitten by a snake, a few hours ago.

The mantri asked people to be quiet and stop preparing for the last rites. He promised that the dead man would be alive again. When people had settled down, he chanted some mantras and took out four cowrie shells from his pocket and threw them up in the air; the cowries disappeared. After half an hour, people saw a snake coming towards the gathering. A pair of cowries were moving round its head as if guiding it, while the other pair of cowries covered it from the sides, not letting it glide away. So led, the snake came close to the dead body and sucked the poison from the fang marks. Soon the man rose up, to the utter amazement of the gathering!

Later the mantri told the crowd that he was going to punish the snake for its offense. As he start chanting mantras, the snake started to tremble all over, restlessly tossing, and twitching its body on the ground. After some time it fell down helplessly. The mantri held up the snake by its tail and threw it on a barren piece of land, away from the village. Both guru and mantri returned home. The guru, much impressed by the mantri's feat, did his best to make him comfortable. Next morning the mantri took leave, despite his host's insistence that he stay a few days more.

V. (told in the first person)

Well sir, my name is Jamal Din and my father was Alim Din. We are from Gujranwala, Punjab, Pakistan. My father was a laborer; he worked hard to make both ends meet. He had two wives. The first wife was childless and from my mother he had three sons. I am the youngest. Both of my elder brothers died at a young age. As I grew up, I started working in the fields with my father. Soon I got a job as a coachman in the house of a revenue officer, in Lahore.

In 1905, famous Kangra earthquake rocked the whole of India. When quake occurred, accompanied by three friends, I was cutting fodder for the cattle, three miles away from Lahore in the Raj Garh area. I remember I almost fell due to the strong jolts.

On that fateful day, I was bitten by a snake on my left ankle in the field. I tore the snake away. I well remember the brute had a pattern of blue, yellow, green, golden and white stripes on its body. The bite shook me, I felt my heart sinking; soon was out of my wits, and ran about the fields like a madman. My friends, seeing what had happened to me were panicked. They hurried to gather the fodder and were off to Lahore, leaving me all alone in my agony. Fortunately, a small stream was flowing close by. I threw myself on the bank. Whenever I came to my senses, I washed my face with the cold water and drank plenty of it.

On reaching the city, my friends told the revenue officer what had happened to me. He sent a man to take me to Lahore. I was attended by Hakim Noor Din of Mochi Gate, Lahore. After one week, I was able to walk about and soon I took charge of my duties. The Hakim told me that a receptive (in heat) female snake had bitten me and from hence on a snake would bite me regularly once or twice a year; this fate I could not escape until my death. Hearing this I was so horrified that I fainted for several hours. I felt myself the most miserable person in Lahore.

At the time I was about 25 years of age, and recently married. As time passed, I almost forgot the incident, worked normally and had a beautiful son. I felt myself a strong man, with no worries. Suddenly one day I started feeling strange weakness and lethargy in my body, and felt a strange odor similar to that of the muskmelon flower, issuing from my body. I went to consult Hakim Sahib, he reminded me that it was twelfth month since I was bitten. Unknown changes taking place in my body, were producing the odor to invite and attract the male snake to mate. In an utter panic, I went to consult several hakims, vaids and mantris; all of them told me it was the nuptial odor of a female snake, so nothing could be done.

The odor became stronger day by day and on the fifteenth day of the twelfth month, it had most intensified. That day my body felt as if it would break down; I could not work. I felt a

strange strong desire to be bitten by a snake! I felt I would enjoy it as sexual experience. I was in an ecstasy and rejoiced thinking that the time was nearing to get my utmost desire. At last I saw a snake coming towards me, as it neared I presented to it my leg. It bit me on my big toe. I felt an extreme sense of enjoyment and could not bear it, so I lay down. The snake was lying beside me. When I came to my senses, the snake had disappeared. For the next ten days I felt very weak. Meanwhile, I was told to see Pir Buksh Mandri of Piruki, Wazirabad, Gujranwala. He advised me to crush head and neck of the snake the next time it comes to bite. He assured me if I did so, no snake would ever dare come near me.

After six months, again I felt intensification of that typical odor in my body. One day when I was preparing fodder for the cattle, I saw a snake coming. I withdrew in a corner. As it came close, I presented my leg to it, and as it bit I put a cloth round its head and crushed it under my teeth. I felt something trickling down my throat. Next morning when I woke up, to my utter horror, I felt intensification of the same odor in my body! Shortly a snake appeared and bit me. From hence on, my bad luck took another turn. I was being bitten every day by a snake! I visited Pir Buksh Mandri, and he told me he could not be of help any more. I met several jogis, hakims, vaids, sanyasis and mandris. I did whatever I was advised to get rid of the snake menace. I was told to smoke a peacock feather, and to eat the black concentrate of tobacco from inside of hukka pipe (the most bitter and foul smelling thing I ever ate). I drank soup made from the body of mongoose; I wore a necklace with a piece of skin of a markhoor (a mountain goat thought to eat only snakes)—but with no redemption of my sufferings.

Six months after the first bite, my son was born. Since then my wife has killed about two thousand snakes, out of which 20 to 25 I ate raw and 25 to 30 after cooking, under the advice of various benefactors. One day, when I came to lunch, my wife was lying on a cot, she had been bitten by a snake hiding under faggots near the fireplace. From thence on our hardships took another turn. I was being bitten daily and my wife every eighth day. Every time she felt the same odor.

It was I'd day, a day of rejoicing, I was sitting with my family, enjoying good food. My son was playing in my lap, occasionally I tickled him, then we laughed together. My wife was busy in cooking sweet rice. My son's legs were on my legs. A snake came to bite me as was routine. Its tooth touched the lad's leg. The poor child was also included in the vicious circle; I was being bitten daily, my wife every eighth day and my son every third month! The only person left unbitten in my house was my niece, who was staying with us and helping my wife in chores. One day my wife was lying on a cot and the girl was siting beside her. It was the time of the visit of snake; my wife saw it coming. She told the girl not to move, but the girl was terrified and jumped down from the cot. Her foot fell on the snake, so she was bitten too!

An elderly person, with a long flowing beard, told my wife to eat cooked meat of snakes. I collected snakes for 15 days in an earthen pitcher. I chopped off their heads and tails, and cut them in pieces, my wife cooked the meat and we ate to our fill. I don't know why, but things proclaimed by different people as cures enhanced our sufferings. We ate snake meat in order to cure ourselves of the snake menace but it increased our sufferings, now every day four snakes came: one for me, a second for my wife, a third for my son and the fourth for my niece! We all were really in great trouble.

I did my best to avoid contacts with snakes: once I hung myself from the ceiling of my room, but within minutes a snake came out of the roof and bit me. Next time I decided to remain on my couch after checking it thoroughly, and lo! a snake came from under the seat of the couch. Oh, I was utterly desperate.

At last, perhaps due to my prayers or prayers of some holy man, the time of my redemption from snake menace arrived. In November 1929, a man from neighboring village came and told me of a famous sanyasi Nanagal Ditta Singh who was staying in the *shamlat* (common sitting place for villagers) of his village. People from all over the area were visiting him, asking for advice and cure for their ailments. It was evening, and I almost ran to meet the sanyasi, without telling anybody in my house. Sanyasi ji was lying on a mat, and two sadhus were sitting beside him. I saluted him and could not control my tears. I went on weeping, I was out of my wits. Sanyasi ji asked me repeatedly what was the matter with me. I was unable to control myself and went on crying. At last sanyasi gave me a pinch of powder and told me to take it with water. I soon felt better. I told him about my miseries. He assured me, that I would soon get rid of the snakes. He was very sympathetic. With strong assurances he told me to come next morning with my family, and bring 30 seers (about 60 lbs) of goat milk.

I had no money to buy milk. I borrowed 10 rupees from a friend. Next morning I took the milk and my family to the sanyasi ji. The sanyasi was not there; the two sadhus greeted us. They called each other by the name of Bava Sawa Das and Bava Maran Das. They took the milk from me, and ordered three buckets of cow-dung. They thoroughly mixed dung with water and let it settle; decanted fluid from the surface, and thrice repeated the procedure. The washed dung was later mixed with the milk. One of the sadhus gave each of us a pinch of green powder placed in a batasha and told us to eat it. Then they excavated a pit large enough to accommodate three of us. Only the tops of our heads were visible from outside. We were told to sit in the pit, and the milk-mixed dung was slowly poured on our heads, as it descended on our bodies, we felt heat coming out, and soothing. We sat in the pit for the whole night.

Next morning we were taken out of the pits, cotton blankets were wrapped around us and we sat for next two days close to fire. We were given bread and milk to eat by the sadhus. The day we descended in the pit was our first day when we were not bitten by snakes.

On third day Bava Sawa Das gave us a strange smelling ointment, and told us to rub it on our bodies. We readily did that, and felt stronger. Then he gave me a powder and advised all of us to take a pinch from it and churn it 101 times in sour milk and eat it with breakfast every morning. Then one of the sadhus took the hukka and went to east, while the other slung his bag on his shoulder and left to west, leaving us behind. We thought they had gone for some time. We sat there waiting for

our benefactors. We wanted to offer them our services and some presents for the good deed they have done to us, but we saw no trace of them. Perhaps Almighty God had sent them only to redeem us from our agony. Saying this, Jamal Din lifted the cloth from his arms and legs; innumerable fang marks were undeniable proof of the truth of his strange story.

To conclude, following is a translation of a news item that appeared in the most popular Urdu newspaper, the *Daily Jang* (Lahore, Pakistan), 30 September 1993, shows how misconceptions about snakes which have been created by folklore have helped nurture the unfounded fear of snakes in the general public. It leads to merciless killing of these animals:

Lightning bolt kills a 125-lb. python

Sahiwal /Sargodha (from our correspondent). You can well know how merciful and compassionate God is towards His creations, and how He protects them, especially human beings, from calamities and dangers, from the following incident that took place during yesterday's rainy night.

In 1992 floodwater in the River Jhelum washed down a large python, which was stranded in a sugarcane field in Lakhiwal village, near Sahiwal, Sargodha. Since then it has lived in the field.

People of the village and surrounding area were harassed and terrified due to dangerous dragon's presence in this area. Several parties armed with firearms tried to kill the python. The snake was fired upon several times, but somehow it lived.

Last night as it rained, God almighty sent a lightning bolt from heaven, killing the dragon, to the relief of His innocent people.

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An Introduction to Identifying Prey Remains in Fecal Samples of Snakes of the Genus *Storeria*

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Snakes of the genus *Storeria* are predators of terrestrial gastropods and earthworms. In dietary studies of these snakes, prey items may be obtained and identified in primarily four ways. First, snakes may be dissected and prey remains obtained from their stomach or intestinal tract. Specimens for such a study may come from preserved material in museums or may be salvaged from snakes found dead on road (DOR). Utilization of museum specimens may offer several advantages, such as allowing one to research a species' diet over a large geographic area while eliminating the need for extensive field time spent setting up and trapping multiple sites. However, if one is interested in the diet of a particular site, there are some disadvantages to such an approach. For instance, the number of specimens from any one site may be limited. Also, dissection is destructive to museum specimens. Some museum specimens may not have been preserved immediately after capture, and may have been kept alive for days or weeks, during which time any food in the stomach could have been digested (or regurgitated and not retained) (J. Beane, pers. comm.). If using museum specimens for diet studies, the investigator should always check the collection date and preservation date if these data are available (J. Beane, pers. comm.). Another approach may be to observe free-ranging snakes actually preying on slugs, snails, or earthworms. This would be very exciting to document. However, such events are rarely observed, even in snakes that are radio-tagged and tracked, let alone those that are not. Snakes of the genus *Storeria* are too small for radio transmitters. A third approach would be to examine prey disgorged voluntarily or forced by palpating the snake during processing. This method might provide satisfactory results if a relatively large number of snakes with prey (at least 30) can be obtained. However, forcing snakes to regurgitate prey may cause them to lose a much needed meal. It may also be detrimental to developing embryos to palpate gravid females. Furthermore, not all snakes will easily give up a meal and it may cause undue stress. A final method, and the one discussed in this paper, is the examination of fecal samples for prey remains. This method is advantageous for several reasons. Firstly, it does not require the snake to be sacrificed, nor does it require forcing a snake to disgorge its prey, which might cause harm. Almost all *Storeria* voluntarily defecate during handling (pers. obs.).

It is the purpose of this paper to aid in identifying commonly found prey remains in fecal samples of snakes of the genus *Storeria*. I have illustrated it with numerous examples of remains of each prey type.

Necessary tools—Before beginning, a few items are needed to aid in the search for prey remains in *Storeria* fecal samples. A dissecting microscope, sometimes called a stereo microscope, is essential for searching for prey remains that may be very small (i. e., < 1.0 mm). I would recommend a microscope with at least two magnifications, 10× and 30×, or 20× and 40×. If you do not already own one, some reasonably priced beginner dissecting microscopes can be found online at Edmund Scientifics (www.scientificsonline.com) and at Amazon (www.amazon.com). Be sure to consult several independent reviews as well as the manufacturer's specifications and descriptions before making a purchase. In addition to a microscope you will also need a plastic or glass petri dish, a glass dropper, a small bottle (ca. 13 drams) for water, 70% ethanol or isopropyl alcohol, extra-fine-pointed teasing needles, small vials for samples, and forceps (Figure 1).

Acquiring and examining the samples—Fecal samples can be collected as follows. During handling, as the snake defecates hold its vent over the opening of a small vial filled with 70% isopropyl alcohol. If you do not plan on examining the sample in the near future, label it with the species of snake it was from; the date; and locality. Alcohol will eliminate most of the unpleasant odor of the fecal sample, and will also kill any bacteria or parasites that may be present. When the time comes to examine the samples, gently remove the fecal mass from the vial, place it in a petri dish, and add several drops of water. Adjust the dissecting microscope so that the sample is observable and in focus. If you have a dissecting microscope with more than one magnification, I would recommend starting with the lower power, then re-examining the sample with the higher magnification. Using the extra-fine pointed teasing needles, I steady the sample with the teasing needle in my left hand while scraping small pieces away with the one in my right hand. Care must be

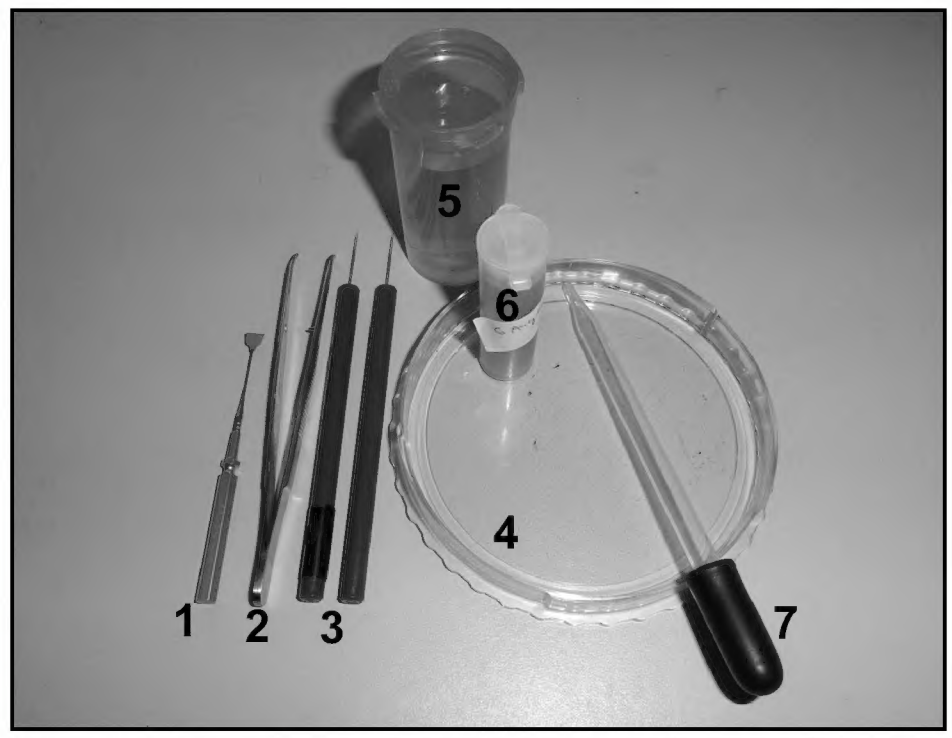

Figure 1. The basic tools necessary for examining fecal samples under a dissecting microscope (not shown). **1**. BioQuip® Mini-scale, used for measuring items to the nearest 0.1 mm. **2**. Forceps for handling samples. **3**. Extra-fine pointed teasing needles for breaking up and sorting through the sample. **4**. Plastic petri dish to allow adding water to sample and examining it on the stage of the microscope. **5**. 13-dram bottle for water. **6**. Small sample vial filled with 70% isopropyl alcohol, to which the fresh sample can be added for storage. **7**. Glass dropper for adding water to sample.

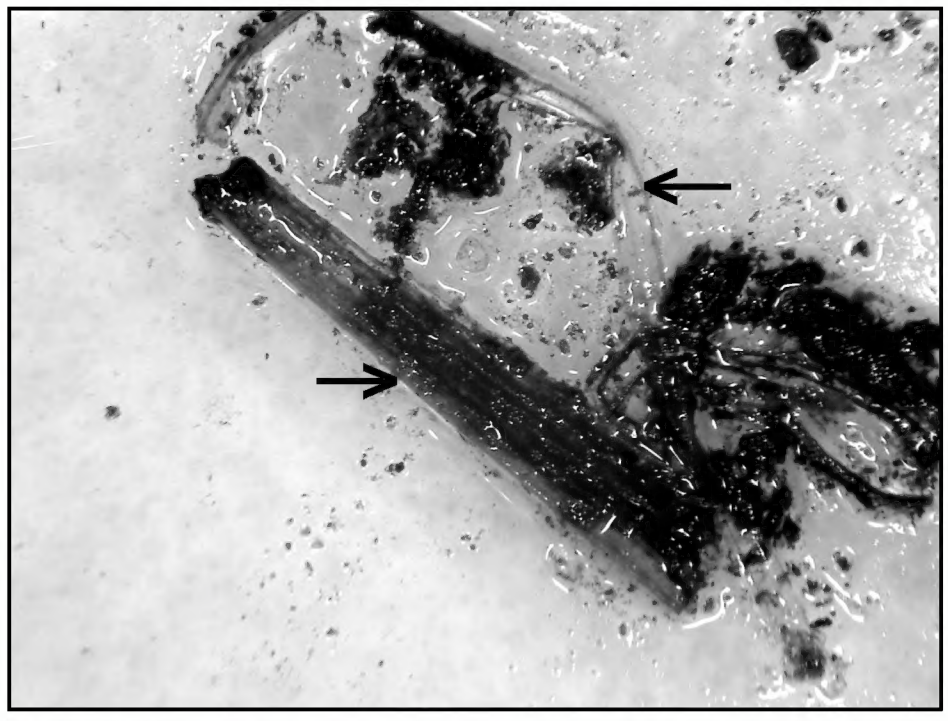

Figure 2. The arrows point to plant remains, which are prevalent in fecal samples of snakes that have fed on slugs. The snake from which this sample was taken also fed on earthworms, as is evident by the prevalence of soil grains.

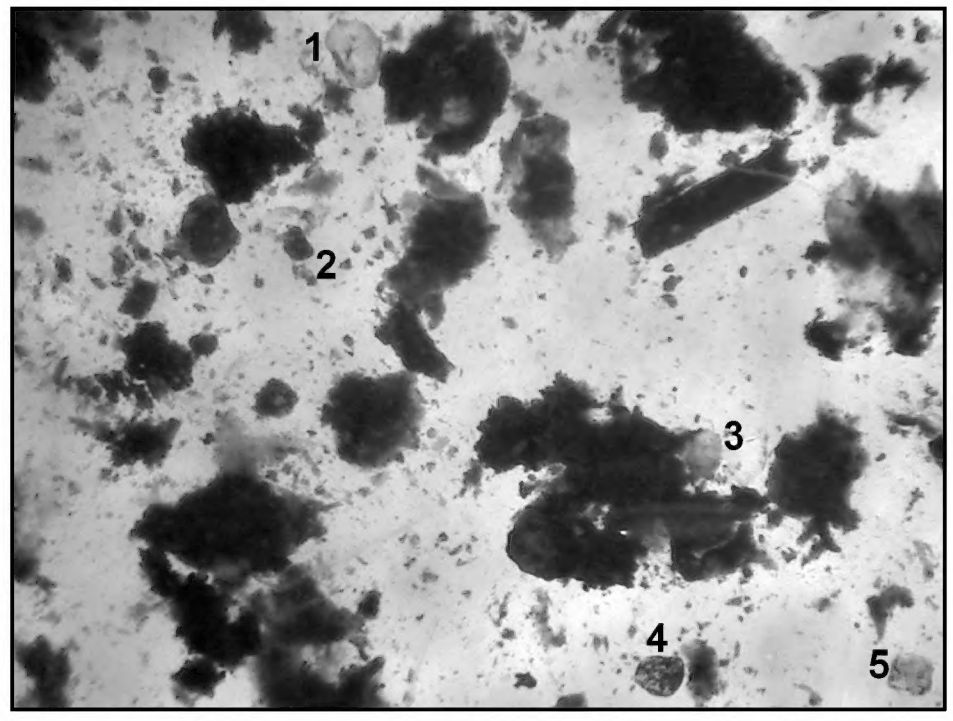

Figure 3. Soil grains are abundant in fecal samples from snakes that have fed on earthworms. The larger soil grains have been labeled 1–5 in this image. There is also quite a bit of organic matter present.

taken during examination, as many prey remains, such as slug shells, are extremely fragile. It takes steady hands, patience, and lots of practice to extract these items intact from a fecal mass. Do not give up if at first you have difficulty.

Below is a summary of what you can expect to find.

Plant material and soil grains—Portions of plant stems, leaves, and seeds, and also soil, may be observed in *Storeria* fecal samples. These remains are usually from the digestive tract of the slugs, snails, and/or earthworms consumed by the snake. Sometimes such items can be incidentally consumed by snakes when they adhere to sticky prey items during ingestion. Generally, *Storeria* that have fed primarily or entirely on slugs will have plenty of plant material in their feces (Figure 2); while those that have fed on earthworms will have relatively more soil grains (Figure 3). As mentioned before, non-prey items may accidentally be ingested by the snakes during feeding. I have observed small rock fragments, glass, fragments of gastropod shells, mites, and arthropods in fecal samples from Dekay's Brownsnake (Gray, 2013).

Evidence of terrestrial gastropods—Slug shells, also called slug plates, are one of the most common items found in *Storeria* fecal samples. The size (length × width) of slug shells found in fecal samples of *S. dekayi* range from 1.0 mm × 0.5 mm to 4.0 mm × 2.0 mm (pers. obs.). The shells of the Limacidae and the granules of the Arionidae are composed of calcite (Evans, 1972), and resist digestion. Since snails are extracted from their shells when preyed upon (Rossman and Meyer, 1990; Gray, in prep), their shells are unlikely to be found. However, during a predation event small snail shells may stick to slugs or earthworms and be incidentally consumed, and subsequently found in a fecal sample (Figure 4). Slug shells are usually whitish in color and somewhat oblong (Figure 5). It is only possible to identify slug shells to the family level. The shells of slugs in the family Milacidae can be distinguished from those of the Limacidae by a protruding and symmetrical nucleus, and a more pronounced height (Reuse, 1983). The shell of limacid slugs has an asymmetrical form and the nucleus is situated laevo-posteriorly (Reuse, 1983) (Figure 6). Extreme care must be taken when extricating slug shells from scats. Slug shells are very brittle and

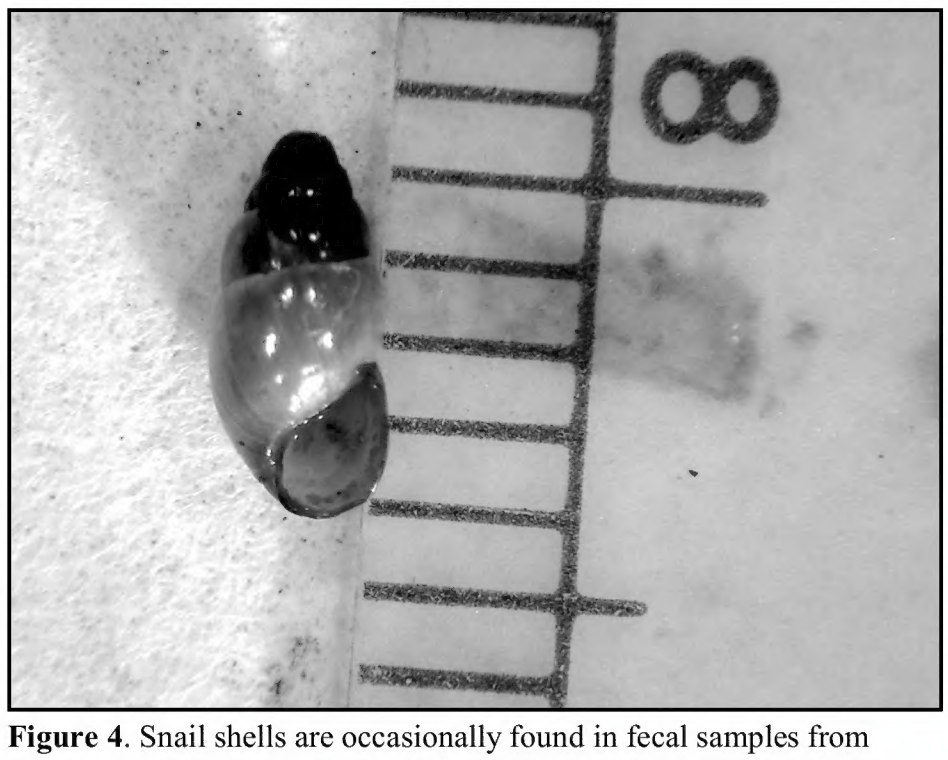

Figure 4. Snail shells are occasionally found in fecal samples from *Storeria*. This is the shell of a Glossy Pillar, *Cochlicopa lubrica*, that was likely ingested incidentally by a *S. dekayi*. The scale to the right of the shell is in millimeters.

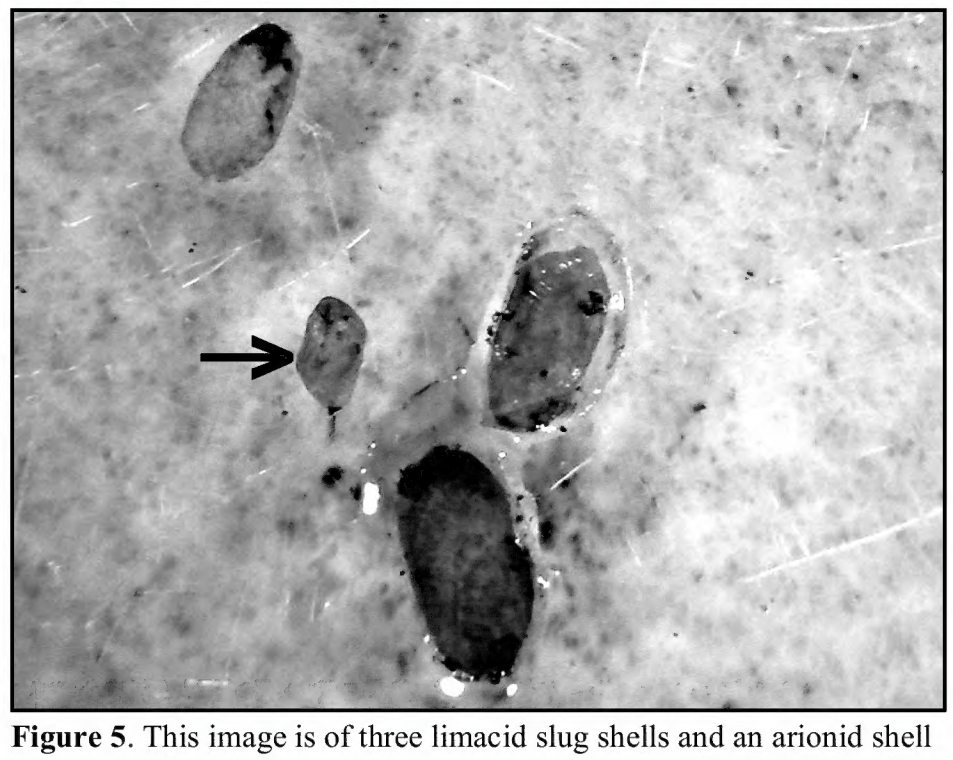

Figure 5. This image is of three limacid slug shells and an arionid shell granule (arrow).

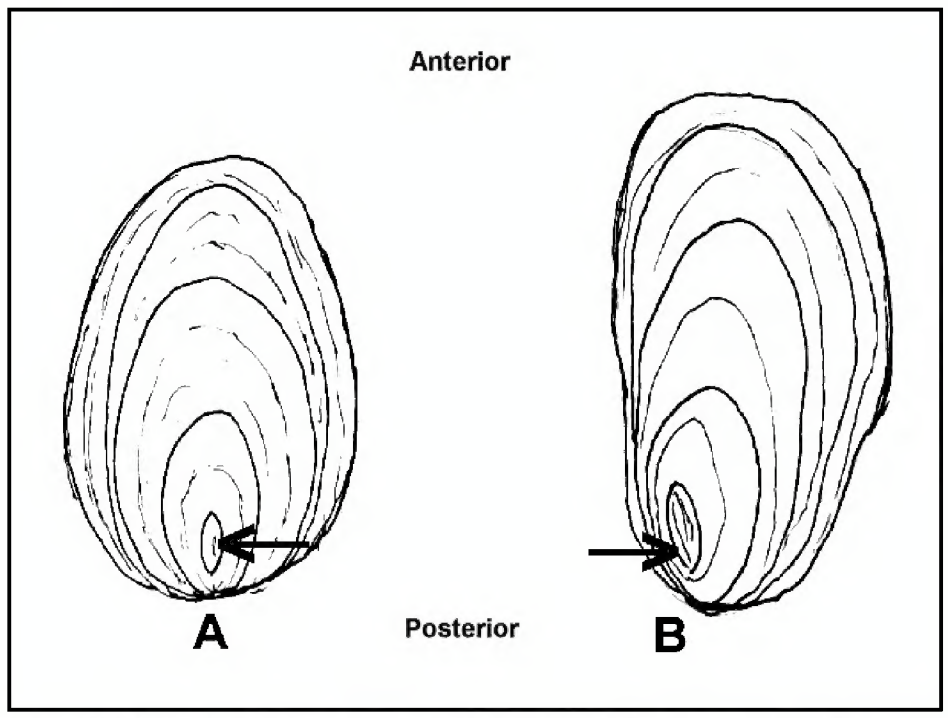

Figure 6. Differentiating between the shells of Milacidae (A) and Limacidae (B). Note the locations of the shell nuclei (arrows) and shape of the shells. The shells of the Milacidae are symmetrical with the nucleus located medially. The shells of the Limacidae are asymmetrical and have the nucleus located laevo-posteriorly.

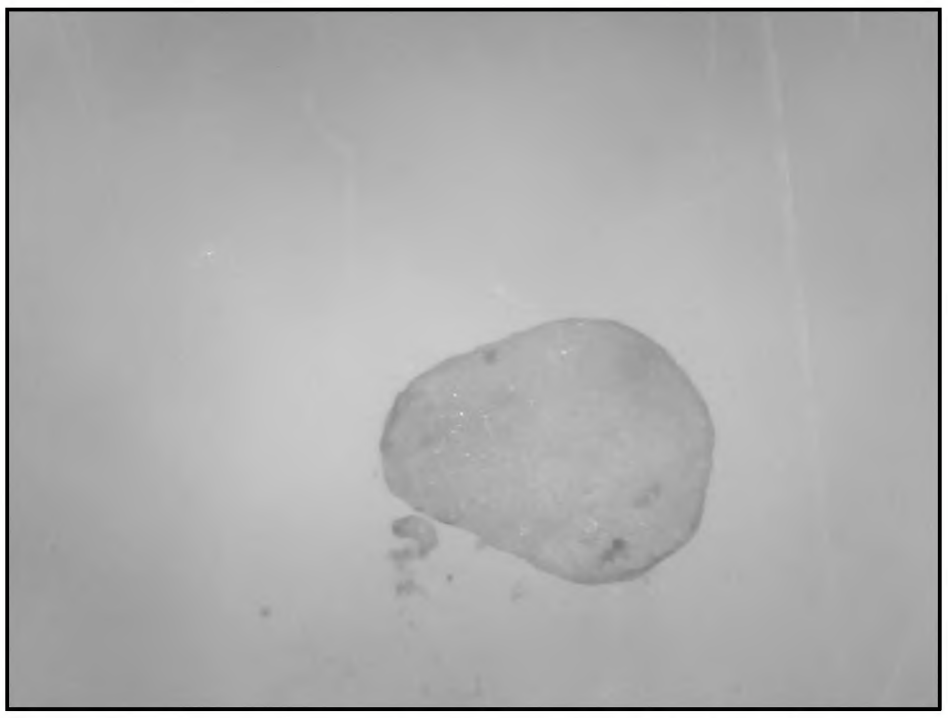

Figure 7. A close-up image of a shell granule (0.8 mm at widest diameter) from an arionid slug.

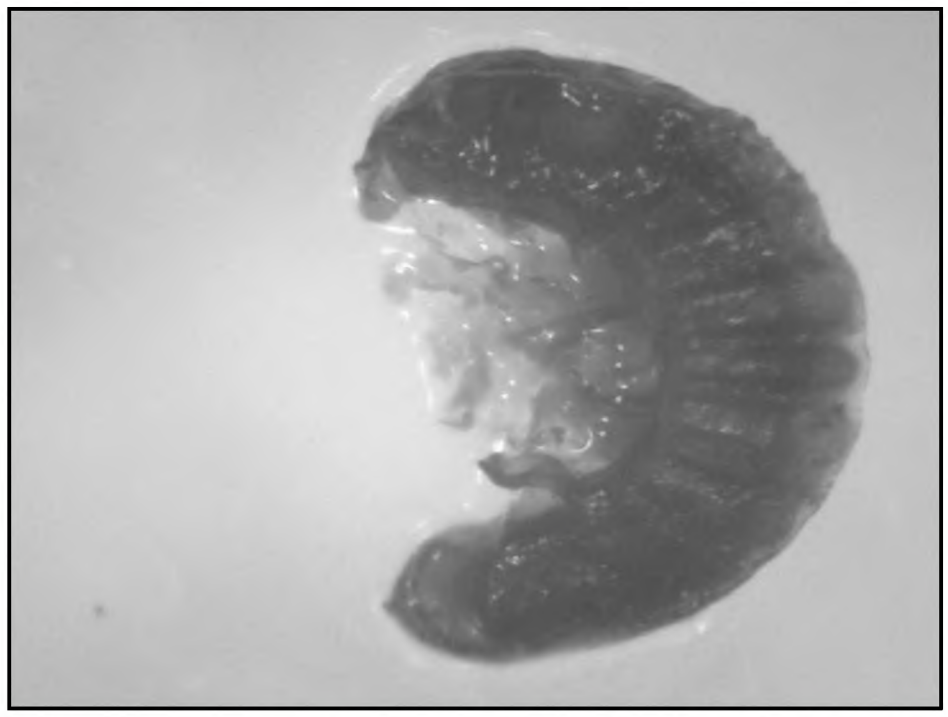

Figure 8. An odontognathous jaw (Arionidae) found in a fecal sample collected from a *Storeria dekayi*. Note the presence of ribs on the jaw.

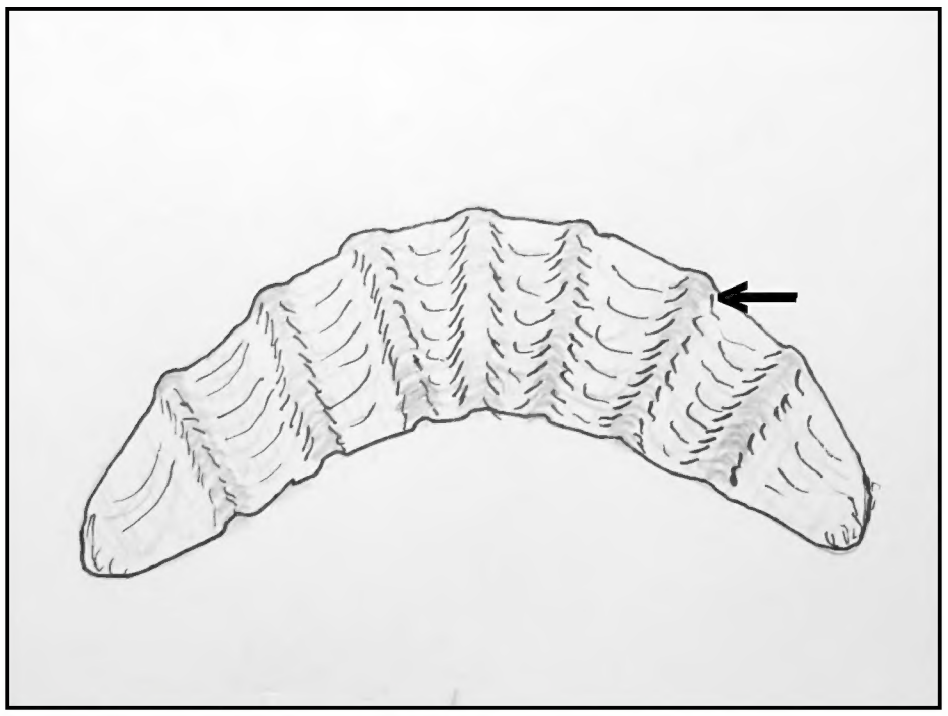

Figure 9. A schematic representation of an odontognathous jaw to better illustrate the presence of ribs (arrow).

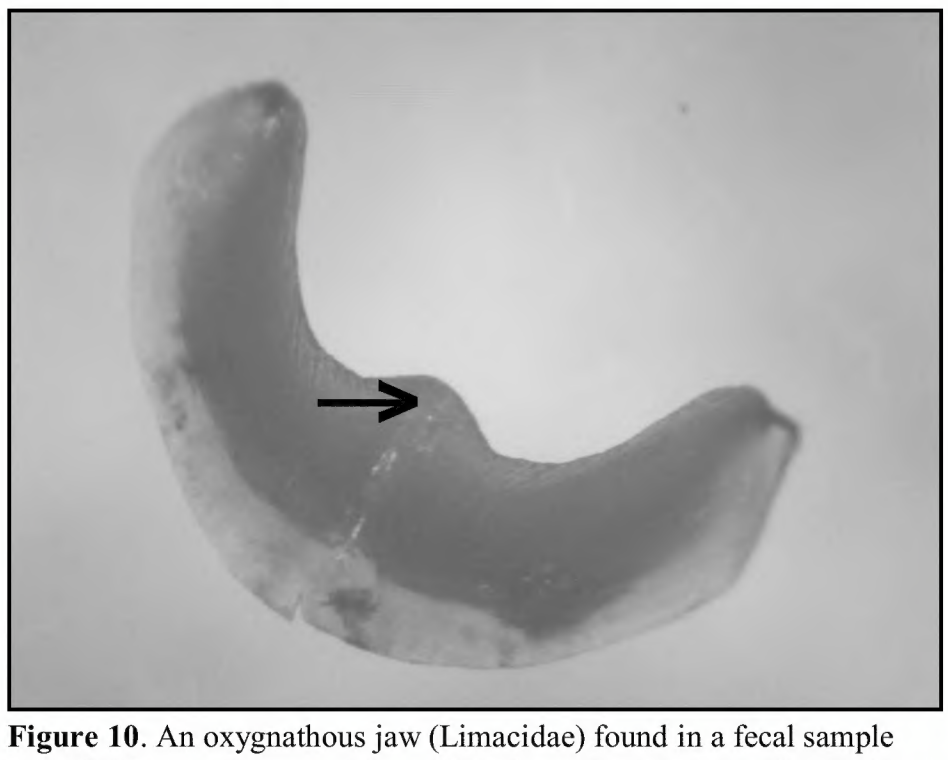

Figure 10. An oxygnathous jaw (Limacidae) found in a fecal sample collected from a *Storeria dekayi*. Note the presence of a median anterior projection (arrow).

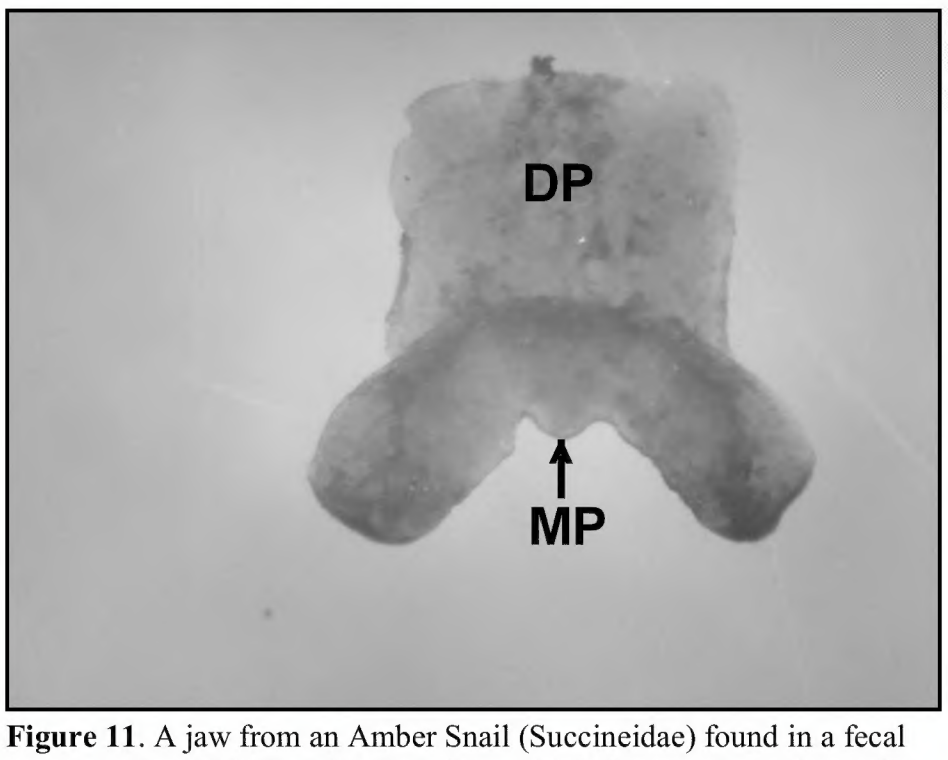

Figure 11. A jaw from an Amber Snail (Succineidae) found in a fecal sample collected from a *Storeria dekayi*. Note the presence of a median projection (MP) and square-shaped dorsal process (DP).

Figure 12. A collection of five succineid snail jaws found in a fecal sample from a *Storeria dekayi*.

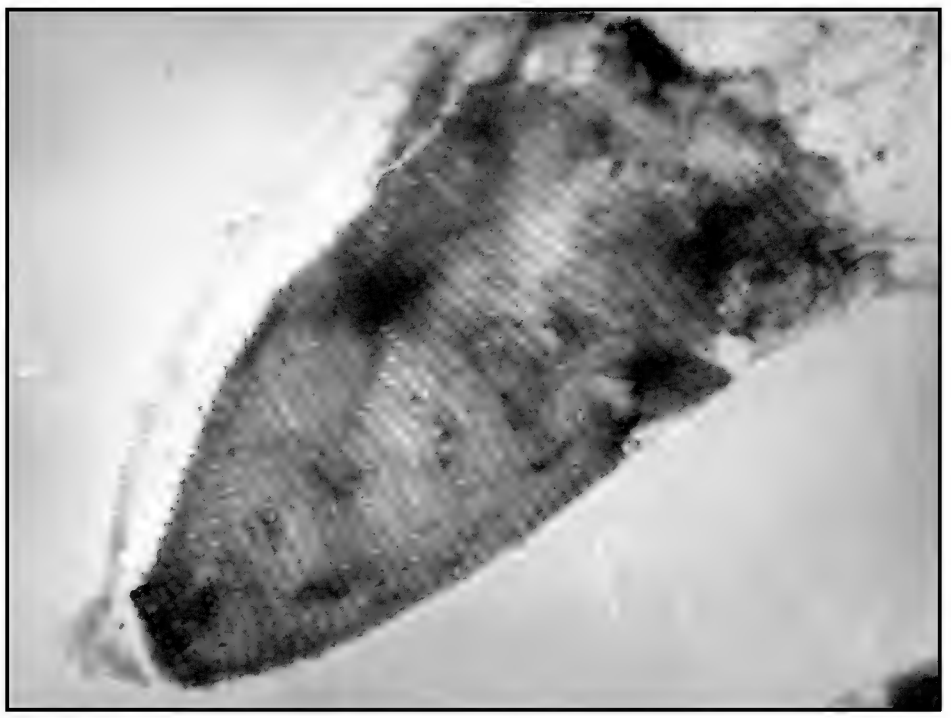

Figure 13. A slug radula found in a fecal sample collected from a *Storeria dekayi*.

easily fragmented. Reuse (1983) contains numerous illustrations of the shells of three species of the family Milacidae and nine species of the family Limacidae. Slugs in the family Arionidae lack flattened shells, but instead have shell granules that are ovoid or sub-spherical and generally less than 1.5 mm in maximum diameter (Evans, 1972) (Figure 7).

Slug jaws that are cresent-shaped with numerous ribs are classified as odontognathous (Figures 8 and 9), and characteristic of slugs in the family Arionidae (South, 1992). Arionid jaws are usually 0.6 to 1.5 mm wide and contain 7 to 16 ribs, depending on the species (Quick, 1960). Oxygnathous jaws are smooth and usually have a median anterior projection or beak (Figure 10), and are characteristic of slugs in the Milacidae and Limacidae (South, 1992). Limacid slug jaws found in *Storeria* fecal samples are usually 0.5 to 1.6 mm wide (pers. obs.). In addition to these slug jaws, occasionally jaws from snails of the family Succineidae are found (Figures 11 and 12). These jaws have a median process on the cutting edge and a relatively large square-shaped dorsal process (Pilsbry, 1948). Jaws of succineid snails found in fecal samples of S. dekayi were 1.0 mm × 1.0 mm to 1.4 mm x 1.4 mm (pers. obs.).

In gastropods, the radula consists of a flexible membrane with numerous teeth arranged in transverse and longitudinal rows. The radula is used alone or with the jaw during feeding (Mackenstedt and Märkel, 2001). Radulae are usually translucent (Figure 13), although some may have a purplish pigment on the anterior face. Radulae found in fecal samples of *S. dekayi* were 1.6 mm × 3.5 mm or smaller (pers. obs.). Although possible, identifying radulae to family or lower is beyond the scope of this work. Radulae are almost always found in association with other gastropod remains, such as jaws and slug shells (Figure 14). Therefore, if a radula is found, continue searching for other remains that will allow at least a family identification.

While the above gastropod remains (jaws and shells) may only provide family level identifications, knowing what species of slugs and snails are present at your study site may help narrow your identification to genus or species. For example, if the only limacid slugs at my site are *Deroceras laeve* and *D. reticulatum*, then I can confidently infer that an oxygnathous jaw found in a fecal sample was from a *Deroceras*. Furthermore, if the sample also contained a 4.0 mm limacid shell, based on size, I could conclude that it was likely from a *D. reticulatum*; shells from *D. laeve* are generally less than 3.0 mm in length (Reuse,

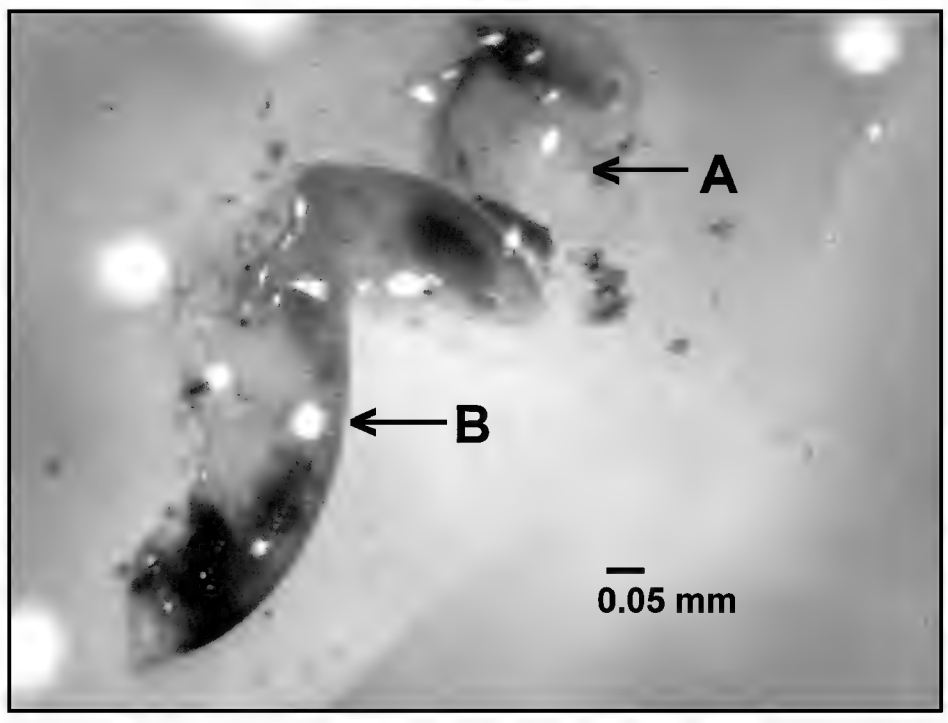

Figure 14. An arionid jaw (A) and radula (B) found in a fecal sample of a *Storeria dekayi*.

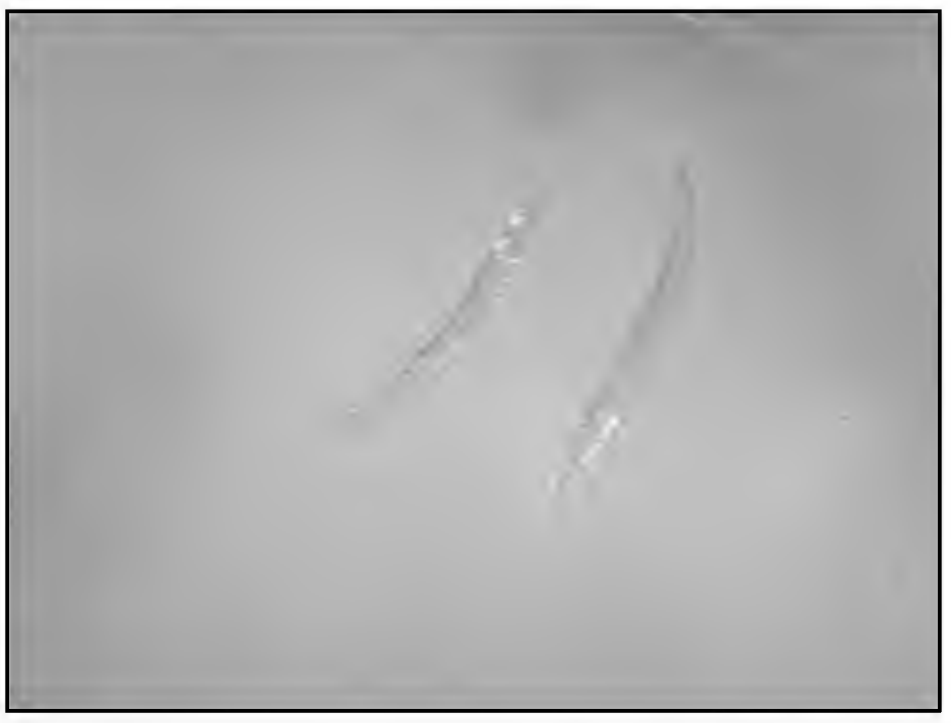

Figure 15. A pair of earthworm setae (ca. 0.7 mm long) found in a fecal sample of *Storeria dekayi*.

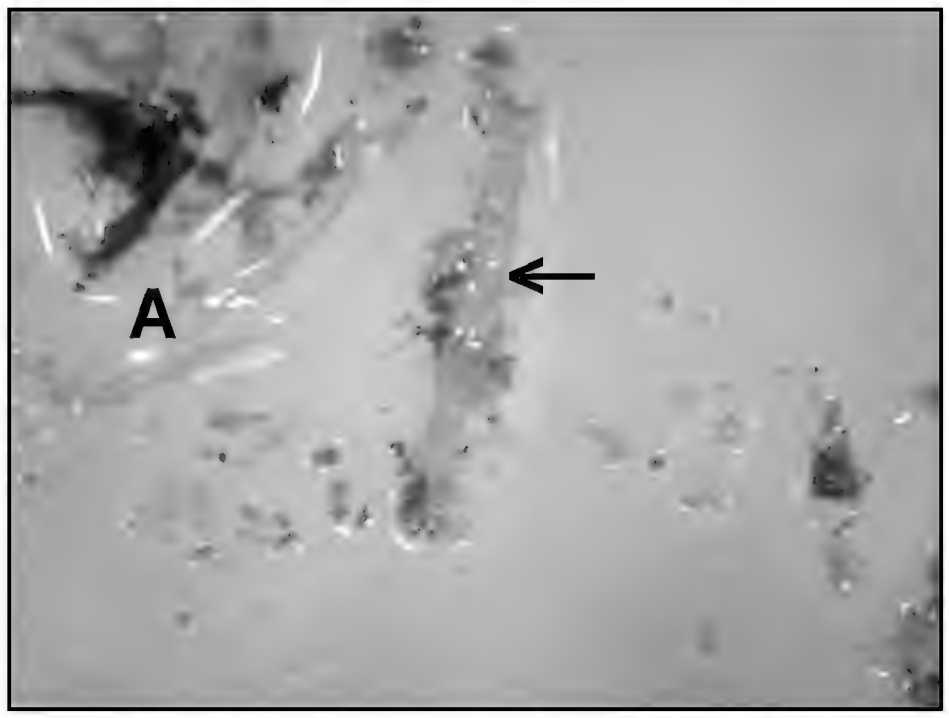

Figure 16. This image illustrates the similarity of a plant spine (arrow) to earthworm setae (A).

1983). If you are seriously considering attempting to make identifications to genus or species, I strongly urge you to consult the works in the literature cited section that are marked with an asterisk. These works contain invaluable information and illustrations that will greatly help you in your identifications. Also, I would recommend contacting a malacologist at a natural history museum to help with difficult identifications, and if you choose to publish your findings, possibly aid you in reviewing your manuscript.

Evidence of earthworms—The main evidence of earthworms in the diet of snakes of the genus *Storeria* is earthworm setae (Figure 15). Setae (singular seta) are solid rods or bristles found in rows along the body of earthworms. They may have a sigmoid shape or be straight, and have a pointed outer tip (Reynolds, 1977) and are usually 0.6 to 0.8 mm in length. Because earthworm setae are somewhat translucent and smaller in size than most slug remains, it may require higher magnifications (e. g., 30× – 50×) to clearly view them. In *S. dekayi* that have fed on earthworms, there is usually an abundance of soil grains in their feces. Spines and bristles from plants may resemble earthworm setae (Figure 16). To differentiate the two, use a fine pointed teasing needle to gently press on the suspected object. Plant bristles will usually collapse, whereas earthworm setae are harder and will not (pers. obs.).

While I doubt that examining *Storeria* fecal samples will replace examining owl pellets in the classroom, I do hope that this paper inspires herpetologically-minded biology teachers, students, citizen scientists, and park naturalists looking for a challenge to consider it. I would also hope that if you go through the trouble of collecting, identifying, and documenting prey remains found in fecal samples, that you would report your findings.

Acknowledgments

I wish to thank Jeff Beane for reviewing the manuscript and offering insightful comments and suggestions.

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What You Missed at the September Meeting

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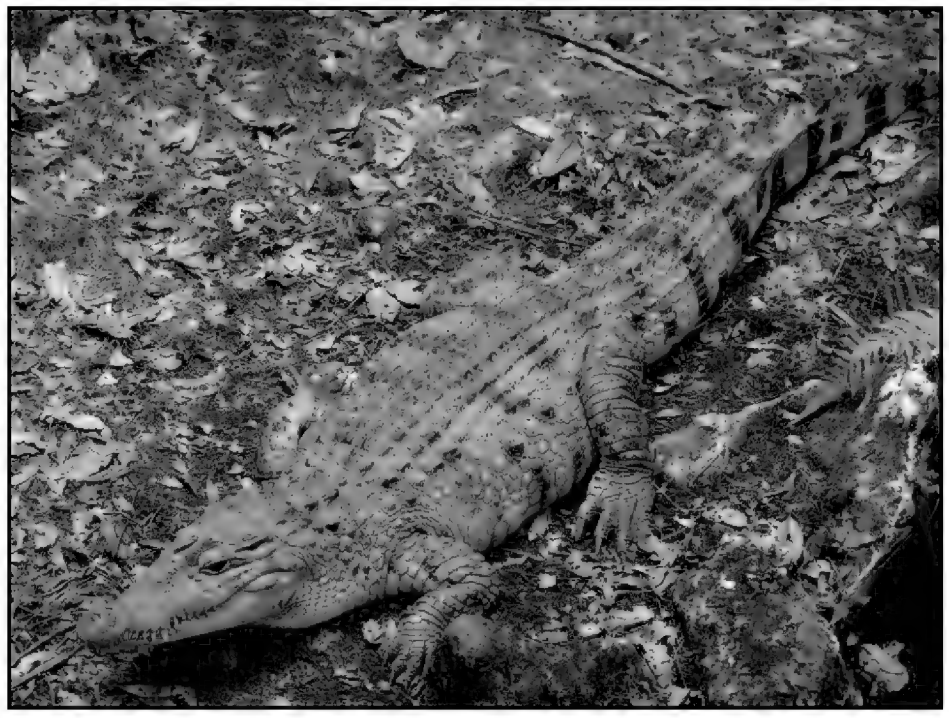
Just swapping emails with Collette Adams was enough to tell me I'd like her. She was unassuming and friendly while inquiring about the logistics of presenting at our September meeting. I'd already heard her speak several years back on Galapagos tortoises, and not only was her presentation great, but she brought baby tortoises with her. She definitely knows her audience. In an email she apologized for not bringing any babies with her to Chicago. She claimed the TSA wouldn't let her board the plane with baby Philippine crocodiles (*Crocodylus mindorensis*). She is well known in conservation circles for her work with endangered species, particularly reptiles. Everyone at the meeting would have been excited about seeing baby crocodiles, but everyone at the meeting took great pleasure in her talk even without live animals. The talk was titled, "Philippine Crocodiles: Conservation and Status 2014."

Collette Adams with a costumed mascot, one of the many ways conservation programs try to educate the people of the Philippines. Photograph by Curt Harbsmeier.

Collette Adams has worked at the Gladys Porter Zoo in Brownsville, Texas, for most of her life. She started as a reptile keeper and is now general curator and grants coordinator at the zoo. Gladys Porter is a small zoo with a reputation for being the first to breed many endangered species. Collette deserves credit for much of that success. She is also on the board of the International Iguana Foundation and a member of the Philippine Crocodile National Recovery Team, the IUCN SSC Iguana Specialist Group and the IUCN SSC Crocodile Specialist Group. She was born and raised in the Chicago area until she moved to Texas when she was nine years old, and she appreciated the opportunity to revisit some of her childhood haunts.

She first described the Philippine crocodile and how it differs from the saltwater crocodile (*Crocodylus porosus*). While both species are threatened in the Philippines, the saltwater croc is common over much of its vast range, while the Philippine croc is endemic to the Philippines and is very rare. Saltwater crocs can reach over 20 feet in length, but the Philippine croc reaches its max at about 10 feet. Philippine crocs are freshwater animals that do not frequent rivers but are limited to small ponds in marshy habitat, habitat that is in decline and highly fragmented. It's estimated that the population has declined 80% in the last three generations and there are probably less than two hundred in the wild. Habitat loss and degradation, destructive fishing techniques, and hunting have hastened the decline. We saw photos of the crocs showing the nearly blue markings on the back. Pretty beasts.


A female showing the pretty markings of the Philippine crocodile (*Crocodylus mindorensis*). Photograph by Curt Harbsmeier.

Collette briefly explained the history of Gladys Porter Zoo's involvement with *C. mindorensis*. She showed photos of the enclosures that have inward slanting walls to stop the small, athletic, and capable climbers from escaping and the doggie doors that allow the crocs access to interior quarters but are not the easiest way for a keeper to escape a charging croc. Collette said, "Don't ask me how I know." We viewed slides of the results of the zoo's breeding, with mandatory squeals accompanying photos of hatchling crocs. From an early age the Philippine crocs don't play well together. If kept together they will often fight and kill each other. Collette thinks it's because their natural habitat involves nearly solitary lives in small, dispersed pools of water. Under those conditions they probably haven't developed the social rules allowing most species of crocs to congregate without mayhem.

We saw maps of the historic and current range of Philippine crocs in the over 7,000 islands that make up the Philippines. The range is now limited to the far north and far south of the country, with the southern population being difficult to study because of the civil strife in that area. Attempts to save the Philippine crocs started in 1987 with the Japanese-sponsored building of the Crocodile Breeding Institute. It was an attempt to provide jobs as well as breed the endangered crocs for conservation and commercial use. The breeding was a success, but the IUCN predicted in the early '90s that the Philippine crocodile would be unlikely to survive in the wild, so many of the crocs that were placed with farmers were brought back to the Institute.

As many conservation initiatives have found, the path to success of any program must include the willing participation of the local people. When the croc breeding programs were first developed, a campaign to change Filipinos' attitudes was begun. The Filipino word for croc, *buwaya*, also had an evil connotation that could be used for excessively greedy people, corrupt

Books about crocodiles were printed in an effort to educate the children of the Philippines. Photograph by Dorina Sole.

Fieldwork is rarely easy. Crossing the Catalangan River in the Northern Sierra Madre Natural Park. Photo courtesy of the Mabuwaya Foundation.

politicians, or even witches. Literature and posters began to combat the negative attitude that most people felt towards the animals. The task is ongoing and today includes community festivals, school presentations, book and poster distributions, and even puppet shows. We saw photos of these important efforts. Collette stressed how readily the Filipinos enjoy almost any celebration and how important almost any printed material is to the local populace.

The 1999 discovery of a population of Philippine crocs farther north than the accepted range led to successful efforts at releasing and establishing new wild populations in habitat that was actually protected by local people who revered crocs. Changing public attitudes, establishing sanctuaries, and mitigating many of the direct threats to crocs have significantly increased the population in the wild. Now the programs are dealing with human/croc conflict.

There are actually two organizations that are working to save the crocs, and as of now they don't get along. Colette hopes that will change eventually. The Mabuwaya Foundation is working in the north and Crocodylus Porosus Philippines, Inc. (CPPI) is working in the south. Both are changing attitudes and increasing populations of the crocs. The CPPI was spearheaded by a hog farmer and uses hog farmers as breeders. They've even managed to establish a wild population on a resort island in the southeast of the country. Collette praised both groups' efforts.

Collette also gave us a bit of a travelog. With her observational powers and empathy for the locals we were given an insight into life in rural Philippines. Using the ceremony of releasing young crocs into the wild, Collette gave us views of the countryside and how the people live. She emphasized how happy the people seemed in spite of their economic conditions and how generous they were to visitors. We saw laughing children enjoying a puppet show and smiling adults displaying one of the juvenile crocs they are rewarded for protecting. Making their way to a release site required Collette and her party to suffer a very long uncomfortable truck ride over ruggedly bad roads and a long hike that included wading a swift river to arrive at a quiet site on the edge of a small lake deep in a very green habitat. Through the slides we saw the effort that the local people put into conserving the crocs.

Using available resources to create head-starting tubs that worked perfectly well. Photograph by John Brueggen.

We saw croc-raising tubs made from 50-gallon drums and village wells paid for with program money that allowed the residents to draw water without risking contact with crocs. Fencing supplies were provided to keep livestock from becoming croc food and a nursery was established to propagate native plants and fruit trees, the native plants serving as a buffer for the croc pools and the fruit trees as buffers for the native plants. The photos of the Filipinos showed the pride they took in their successful conservation efforts.

Collette's talk portrayed two successful conservation efforts that incorporate nearly everything we've learned about saving species, so I asked what else needs to be done. Collette responded by saying how important a continuing effort, mostly in the form of fund raising, is to sustain the program. She was certain that if funding were to be cut off the programs would become moribund and ineffective and any successes would be reversed. She talked of zoos' roles in fund raising, advice, and continuing efforts towards safeguarding wild populations of all animals.

We learned something about Philippine crocodiles' habits and quirks, Filipino customs and pride, and captive husbandry of an endangered species. We dipped a bit into Philippine politics and enjoyed amazing scenery. I think we learned a little of the dedication displayed by a person committed to saving species on the brink. After the meeting I finally had a chance to chat with Collette and her friends. She has many friends, and it's easy to understand why when one gets an opportunity to know her a little better. What a pleasure to have that opportunity. Maybe she'll come back to talk about some of her other efforts. We certainly hope so.

Herpetology 2014

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

WINTER ACTIVITY OF SONORAN DESERT TORTOISES

B. K. Sullivan et al. [2014, Chelonian Conservation and Biology 13(1):114-119] note that little is known regarding the activity of desert tortoises during winter, especially for the Sonoran desert tortoise (*Gopherus morafkai*). They observed adult, juvenile, and hatchling *G. morafkai* active during November, December, January, and February at three field sites in upland Sonoran Desert in central Arizona. At one site all individuals under observation (n = 36), including males, females, and hatchlings, emerged from hibernacula to drink during the first heavy (> 20 mm) rainfall event (December); at all three sites, females were observed active (basking, foraging) during winter much more frequently than were males.

LEATHERBACKS EMIT SOUNDS IN THE NEST

C. R. Ferrara et al. [2014, Chelonian Conservation and Biology 13(1):110-114] note that only a few studies have documented acoustic communication in chelonians, and provide additional evidence that sound plays an important role in the interchange of information in this group. The authors recorded 12 nests of leatherback sea turtles, *Dermochelys coriacea*, during March 2012 at Barra de la Cruz Beach, Oaxaca, Mexico. Four types of sounds were identified from recordings of nests after 51 d of incubation; results reinforce the idea that sounds are important to coordinate group behavior in turtles.

HABITAT FOR MORELET'S CROCODILES

R. González-Trujillo et al. [2014, J. Herpetology 48(2):188-194] note that understanding the response of species to land-use change is necessary to improve management and conservation policies. The authors assessed the impact of vegetation cover and land-use change on Morelet's crocodile (*Crocodylus moreletii*) populations in nine wetlands in central Veracruz, Mexico, to test the hypothesis that higher forest cover and lower anthropogenic impact increases crocodile density. They correlated the relative density of crocodiles with wetland attributes, including depth, pH, salinity, and richness and structure of bordering vegetation; and with anthropogenic disturbance factors, including the proportion of modified land surrounding the water body, road density and road type. The relative density of crocodiles was correlated positively with vegetation cover and correlated negatively with plant density and with the presence of nonpaved roads, particularly in the zone that bordered the water bodies (core zone). These findings suggest that as long as the water bodies are bordered with arboreal vegetation, land-use change and paved road density in inland areas had minor impacts on Morelet's crocodile populations in Mexican wetlands. The vegetation cover and the number of nonpaved roads within the core zone are useful indicators of habitat suitability for the Morelet's crocodile. The conservation of mangroves and forest remnants is therefore essential for the maintenance of crocodile populations.

HABITAT PARTITIONING AMONG FRESHWATER TURTLES

W. J. B. Anthonysamy et al. [2014, Copeia 2014(2):269-278] note that understanding species–habitat relationships is important for achieving effective habitat management goals, but few studies have evaluated habitat use in co-occurring turtle species. The authors examined habitat partitioning among five species of freshwater turtles at an isolated preserve in northeastern Illinois. From May–September 2006, they conducted a radio-telemetry study to determine differences in macro- and microhabitat use, niche breadth, and niche overlap of 50 turtles representing rare (*Emydoidea blandingii*, *Clemmys guttata*) and common species (*Chrysemys picta*, *Chelydra serpentina*, *Sternotherus odoratus*). Both levels of habitat analysis showed strong partitioning between *C. guttata* and the common species as well as marked overlap in habitat use between *E. blandingii* and *C. serpentina*. Use of mesic dolomite prairie was greater in *C. guttata* compared to *S. odoratus*. Further, use of pond was greater in all common species compared to *C. guttata* and *E. blandingii*. Species strongly partitioned microhabitat along an axis comprised of vegetation height, understory canopy cover, water depth, and percent open water at surface, as well as in use of wetlands with organic substrates. Patterns of macro- and microhabitat use and measures of niche breadth and niche overlap suggest that *E. blandingii* and *C. serpentina* are habitat generalists whereas *C. guttata* is a habitat specialist. No evidence was found of agonistic interactions among species, thus habitat partitioning observed in the study is likely a result of species-specific traits and requirements. These findings suggest that *C. guttata* is most vulnerable to habitat degradation and that variation in wetland habitat characteristics is necessary to support a diverse freshwater turtle community.

DO GREEN TREEFROGS EAVESDROP ON PREY CALLS?

G. Höbel et al. [2014, J. Herpetology 48(3):389-393] note that efficient foraging may be facilitated by attending to the signals produced by potential prey items. Such predatory eavesdropping is taxonomically widespread, yet there is currently a dearth of information for amphibians. Anuran amphibians, with their highly developed auditory system and robust phonotaxis toward advertisement calls when searching for mates, seem predisposed to use this hearing capability in other behavioral contexts such as foraging. The authors conducted playback experiments to test whether green treefrogs (*Hyla cinerea*) eavesdrop on sexual signals of prey (house cricket [*Achaeta domesticus*] song), or whether the presentation of acoustic prey stimuli in addition to a live cricket improved prey localization. The frogs did not use acoustic prey signals to guide their foraging movements. Frogs were not indifferent to acoustic stimuli, however, because they moved away from the sound source in some treatments.

Unofficial Minutes of the CHS Board Meeting, September 12, 2014

In the absence of both the president and the vice-president, Mike Dloogatch called the meeting to order at 7:53 P.M. Board members John Archer, Erica Mede and Jason Hood were absent.

Officers' Reports

Recording Secretary: Minutes from the previous board meeting were unavailable.

Treasurer: Andy Malawy presented the financial report for the month of August.

Membership Secretary: Mike Dloogatch reported that membership is steady at approximately 475, and read aloud the list of newly lapsed members.

Sergeant-at-arms: Dick Buchholz reported 47 in attendance at the August general meeting.

Publications Secretary: Aaron LaForge has purchased a new laptop computer for use at the general meetings. The new camera for videotaping meetings should arrive prior to the September general meeting.

Committee Reports

Shows:
- Notebaert Nature Museum, first full weekend of each month.
- Westmont Pet Promenade, September 13.
- Meet the Creek, Kiwanis Park, Brookfield, September 20.
- NARBC Tinley Park, October 11-12.
- SEWERFest, November 9.

Adoptions: Linda Malawy briefly described some of the animals available.

Junior herpers: There were 43 in attendance at the September meeting. The next meeting will be "Show and Tell," an opportunity for participants to bring their animals and talk about them. Currently no speakers are slated for upcoming meetings. T-shirt sales continue to be brisk. Discussion ensued regarding the background checks for volunteers. The possibility of using QR codes on various promotional materials was discussed. Rich continues working on ideas for both CHS and CHS Jr. Herpers banners.

Library: Teresa Savino has bought a stepladder, and is still cataloguing books. The library now includes approximately 500 books. Emails will be sent to remind people of due dates. Colleen has a lead on children's reptile books in the style of Dr. Seuss, which she will look into procuring for the library.

Old business

Nachusa Grasslands: On August 24 a group of CHS members visited the Nachusa Grasslands in Franklin Grove, Illinois, at the invitation of Kimberly Schmidt, who received a CHS grant this year to study the ornate box turtles there. Nachusa is owned and managed by the Nature Conservancy. Kimberly informed the group about the state of the ornate box turtles in the grassland, the coming reintroduction of bison to the area, and restoration of native prairie plants. She then led a field trip on which one previously unmarked turtle was found and a second turtle was located via radio-tracking.

October board meeting: October 17 conflicts with the Midwest Herpetological Symposium; no decision was made regarding rescheduling.

Nominating committee: The board discussed the need to finalize this committee.

Revamping bylaws: No new ideas were offered. There was discussion of how to encourage involvement in our society.

December general meeting: John Archer will check with PNNM for alternate dates, as the last Wednesday is New Years Eve.

New Business

Linda Malawy is stepping down after more than 12 years of coordinating Herps of Illinois at ReptileFest. A new volunteer is needed.

Repository for old records: Mike Dloogatch has been sorting through old papers from the 1960s, minutes of the predecessor Chicago Herpetological Society from the 1950s, and various other interesting items from years gone past. Maintaining the historical connections requires storage; suggestions called for.

Insurance for Jr. Herpers: We will check with our insurance company to determine if coverage through CHS extends to Jr. Herpers.

Round Table

Dick Buchholz and Mike Scott went to southern Illinois. Dick was given a prairie kingsnake by a teacher in Indiana where he'd done a school program in February.

Norine Barnes took a girlfriend to get new van and while waiting found a toadaly beautiful dark toad.

While displaying animals at a recent show, Rich Lamszus helped a child with no arms have his first opportunity holding a snake—very rewarding experience.

Colleen Schwarz was gifted with 2 horned lizards. She's having ants shipped from the Southwest. Costly endeavor; she would consider giving them to a qualified, interested individual.

Roy Carlson ran the Chicago half marathon, he came in 42nd out of 100 runners in his age group.

Brandon Ottolino's northern water snake had 37 babies He is interested in becoming a member-at-large.

Aaron LaForge is expecting a shipment of fire salamanders next week from Hamm, Germany.

Nancy Kloskowski's checkered garter had 3 babies—2 normal and 1 albino.

The meeting was adjourned at 9:42 P.M.

Respectfully submitted by Linda Malawy

Advertisements

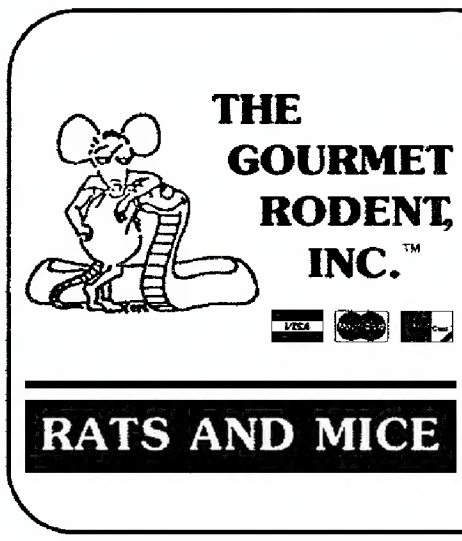
For sale: **highest quality frozen rodents**. I have been raising rodents for over 30 years and can supply you with the highest quality mice available in the U.S. These are always exceptionally clean and healthy with no urine odor or mixed in bedding. I feed these to my own reptile collection exclusively and so make sure they are the best available. All rodents are produced from my personal breeding colony and are fed exceptional high protein, low fat rodent diets; no dog food is ever used. Additionally, all mice are flash frozen and are separate in the bag, not frozen together. I also have ultra low shipping prices to most areas of the U.S. and can beat others shipping prices considerably. I specialize in the smaller mice sizes and currently have the following four sizes available: Small pink mice (1 day old—1 gm) , $25 /100; Large pink mice (4 to 5 days old—2 to 3 gm), $27.50 /100; Small fuzzy mice (7 to 8 days old—5 to 6 gm) , $30/100; Large fuzzy mice / hoppers (10 to 12 days old—8 to 10 gm), $35/100 Contact Kelly Haller at 785-234-3358 or by e-mail at kelhal56@hotmail.com

For sale: Captive-bred Rosy Boas. Forty-year C.H.S. member is selling 2011 and 2013 healthy and excellent feeding offspring. Special "cheap" prices to C.H.S. members. Arrangements can be made for delivery to southern Wisconsin or northern Illinois. Phone (608) 427-3864 or email zartenfour@mwt.net.

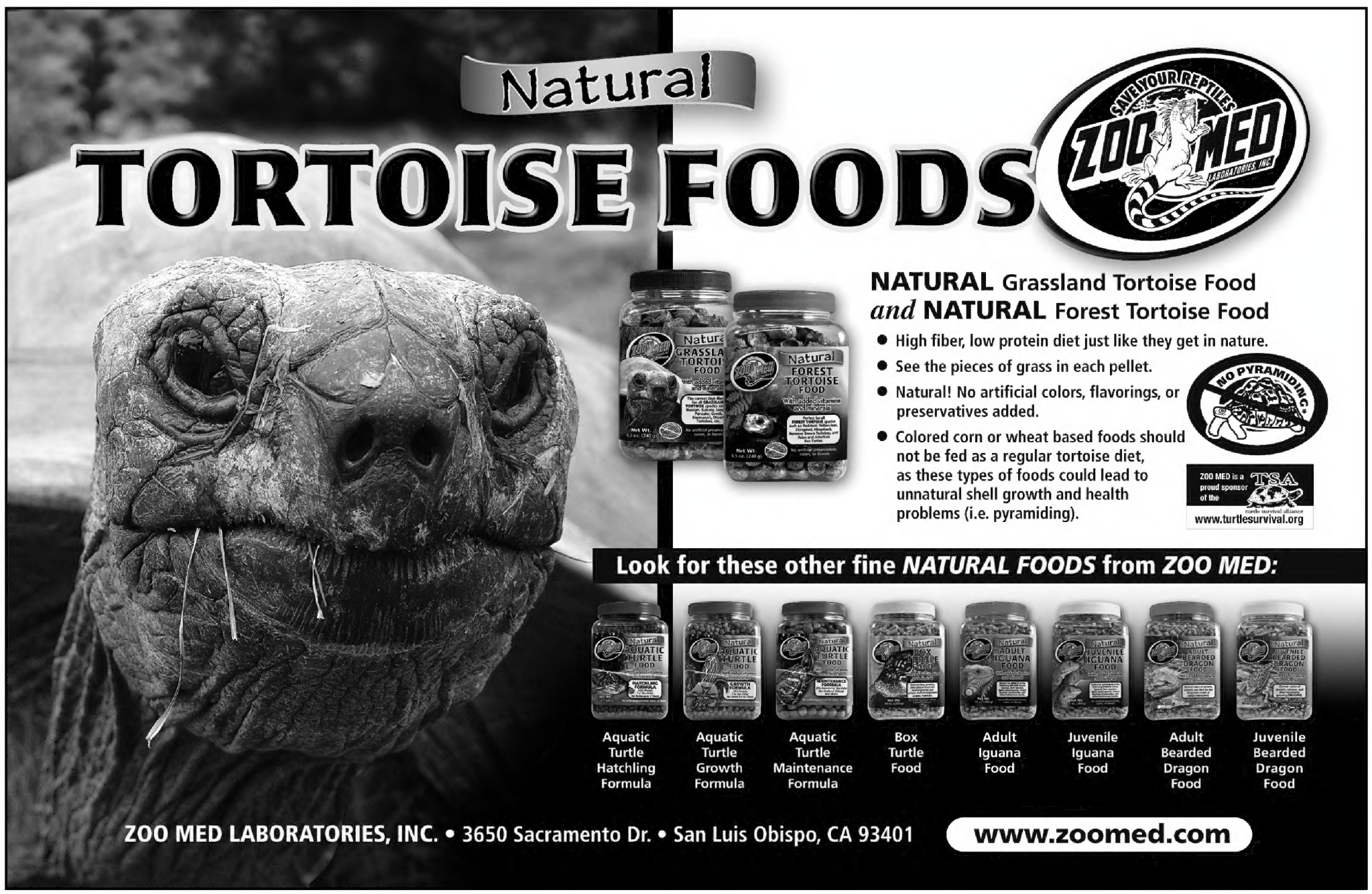
For sale: Standard 24" Neodesha reptile cages, 3 × 6" vent on top, tempered glass front. Like new condition, no burns or stains, original glass. These cages do not have the dam (horizontal molding that crosses the entire front width of the cage, used to hold back bedding material)—easier to clean without the dam. About 20 currently available, $45 each. Linda Malawy, (630) 717-9955, linda_malawy@hotmail.com

For sale: High quality, all locally captive-hatched tortoises, all bred and hatched here in the upper Midwest. Baby leopards, Sri Lankan stars, and pancakes usually available, and are all well-started and feeding great! Leopards are $125 ea., Sri Lankans (2012 hatched) $475 ea. And Pancakes are $195 ea. Leopards for out of state sale/shipping require a veterinary health certificate (inquire for cost). E-mail at KKranz1@wi.rr.com or call Jim or Kirsten at 262 654 6303.

Herp tours: **Costa Rica herping adventures**. Join a small group of fellow herpers for 7 herp-filled days. We find all types of herps, mammals, birds and insects, but our target is snakes. We average 52 per trip, and this is our 10th year doing it. If you would like to enjoy finding herps in the wild and sleep in a bed at night with air-conditioning, hot water and only unpack your suitcase once, instead of daily, then this is the place to do it. Go to our web-site http://hiss-n-things.com and read the highlights of our trips. Read the statistics of each trip and visit the link showing photos of the 40 different species we have found along the way. E-mail at jim.kavney@gmail.com or call Jim Kavney, 305-664-2881.



Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to mdloogatch@chicagoherp.org.



News and Announcements

2015 CHS HERPETOLOGICAL GRANTS PROGRAM

The mission of the Chicago Herpetological Society is education, conservation and the advancement of herpetology. To further this mission, the CHS provides grants of up to $1,000 in the following categories:

1. Illinois Herpetology
2. Graduate Student Research in Herpetology
3. Undergraduate Research in Herpetology
4. Conservation
5. Captive Management, Husbandry and Propagation

The number of grants awarded in each category will depend on the grant applications received; it is possible that not all categories will receive awards and some categories may receive more than one award. The Grants Committee reserves the right to reassign the category under which a given proposal is submitted.

To qualify for a grant, the applicant must be a member of the Chicago Herpetological Society as of December 31, 2014. In accepting a grant, the recipient agrees to acknowledge the Chicago Herpetological Society in any publications or public presentations of research funded by this grant. Further, the recipient agrees to abide by all state and federal laws.

Recipients must submit a short report of their research findings to the CHS within 6 months of their anticipated completion date. The report should be written for a general audience and be suitable for publication in the CHS *Bulletin* or on the CHS webpage. This requirement may be waived if results will be published in a peer-reviewed journal within a year. Recipients may be invited to present a program at a CHS general meeting.

Applications must include the following:

1. Project title
2. Applicant's name, address, phone and email
3. Submission category
4. Introduction—Provide background for the proposed work. Include a clear statement of the objectives of the proposed work.
5. Materials and methods—Describe the study site and the materials and methods (in non-technical terms) that will be used to accomplish the objectives of the proposed research. Attach plans, diagrams and maps as necessary. Indicate whether you have an approved Animal Care (IACUC) protocol covering the proposed methods or whether you will be submitting such a protocol.
6. Applicability and broader implications—How does this work apply to conservation, education and the advancement of herpetology?
7. Budget—Indicate the budget for the entire project and make clear what portion the CHS grant money would fund.
8. Anticipated completion date for the research
9. Applicant curriculum vitae
10. Letters of support—Student applicants must include a letter of support from a faculty advisor. For non-academic individual and institutional applicants, letters of support from collaborating partners or institutions are strongly encouraged. Letter(s) of support may be emailed and should include an address and phone number at which the writer can be contacted. Letter(s) of support may also be sent by postal mail.

Proposals should be submitted as email attachments. Attachments should include the applicant's name in the file name. Proposal text should not exceed five double-spaced pages (excluding literature cited, applicant's CV, and letters of support) and should be typed using a common font (e.g., Arial, Times, Courier) no smaller than 10pt. Applications must be received by December 31, 2014, and awards will be announced by February 15, 2015.

Proposals should be emailed to grants@chicagoherp.org

Questions should be directed to Mike Dloogatch (773) 588-0728, or grants@chicagoherp.org

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, October 29, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Chris Gillette**, wildlife biologist, photographer, and adventurer born and raised in Florida, will speak about "Behavior of American Alligators and Crocodiles in Captive and Wild Situations." Chris is perhaps best known from the cable TV show "GatorBoys."

The November 26 meeting will include the annual election of officers and members-at-large of the CHS Board of Directors.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the next board meeting, to be held at 7:30 P.M., Friday, November 14, at the Schaumburg Township District Library, 130 S. Roselle Road, Schaumburg.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info visit the group's Facebook page.

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